

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

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1-42. (canceled).

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43. (currently amended) A helper cell for producing an infectious, defective alphavirus particle, comprising, in an alphavirus-permissive cell:

(a) ~~an alphavirus replicon-a recombinant alphavirus vector RNA, wherein the alphavirus is selected from the group consisting of Sindbis virus and Semliki Forest virus; wherein the replicon recombinant alphavirus vector RNA comprises the alphavirus packaging signal, a heterologous RNA sequence, and a sequence encoding at least one of the alphavirus structural proteins, wherein the replicon recombinant alphavirus vector RNA furthermore lacks a sequence encoding at least one of the alphavirus structural proteins; and~~

(b) at least one separate helper RNA encoding the structural protein(s) absent from the

~~repliconrecombinant alphavirus vector RNA~~, said helper RNA(s) lacking the alphavirus packaging signal; wherein the combined expression of the ~~repliconrecombinant alphavirus vector RNA~~ and the helper RNA(s) produces an assembled alphavirus particle which comprises a heterologous RNA sequence, is able to infect a cell, and is unable to complete viral replication in the absence of helper RNA due to the absence of the structural protein coding sequence in the packaged ~~repliconrecombinant alphavirus vector RNA~~, wherein said ~~repliconrecombinant alphavirus vector RNA~~ encodes the alphavirus capsid protein, and wherein said at least one separate helper RNA(s) encodes the alphavirus E1 glycoprotein and the alphavirus E2 glycoprotein.

44. (canceled).

45. (currently amended) The helper cell according to claim 4243, wherein at least one of said helper RNA and said ~~repliconrecombinant alphavirus vector RNA~~ includes at least one mutation in E1, E2 or E3.

46-50. (canceled).

51. (currently amended) A method of making infectious, defective, alphavirus particles, comprising:

providing a helper cell according to claim 43;

producing said alphavirus particles in said helper cell;

and

collecting said alphavirus particles from said cell,  
wherein said ~~alphavirus replicon~~recombinant alphavirus vector  
RNA and said at least one separate helper RNA are introduced  
into said helper cell by electroporation.

52. (previously presented) Infectious alphavirus particles produced by the method of claim 51.

53-62. (canceled).

63. (currently amended) A helper cell for producing an infectious, defective alphavirus particle, comprising, in an alphavirus-permissive cell:

(a) an ~~alphavirus replicon~~recombinant alphavirus  
vector RNA, wherein the alphavirus is selected from  
the group consisting of Sindbis virus and Semliki  
Forest virus; wherein the ~~replicon~~recombinant  
alphavirus vector RNA comprises the alphavirus  
packaging signal, a heterologous RNA sequence, and a

sequence encoding at least one of the alphavirus structural proteins, wherein the ~~repliconrecombinant~~ alphavirus vector RNA furthermore lacks a sequence encoding at least one of the alphavirus structural proteins; and

(b) a helper RNA system comprising helper RNAs encoding the structural protein(s) whose transcripts are absent from or otherwise not functional in the ~~repliconrecombinant~~ alphavirus vector RNA, each of said helper RNA(s) lacking any alphavirus packaging signal;

wherein the combined expression of the ~~repliconrecombinant~~ alphavirus vector RNA and the helper RNA(s) produces an assembled alphavirus particle which comprises a heterologous RNA sequence, is able to infect a cell, and is unable to complete viral replication in the absence of helper RNA due to the absence of at least one structural protein coding sequence in the packaged ~~repliconrecombinant~~ alphavirus vector RNA.

64. (currently amended) A helper cell for producing an infectious, defective alphavirus particle, comprising an alphavirus-permissive cell transfected with RNAs comprising:

(a) an alphavirus ~~repliconrecombinant~~ alphavirus vector RNA, wherein the ~~repliconrecombinant~~ alphavirus

vector RNA comprises the alphavirus packaging signal and a heterologous RNA sequence, wherein the ~~repliconrecombinant alphavirus vector~~ RNA furthermore lacks sequences encoding alphavirus structural proteins; and

(b) at least a first and second helper RNAs separate from said ~~repliconrecombinant alphavirus~~ vector RNA and separate from each other, said first and second helper RNAs encoding the structural proteins absent from the ~~repliconrecombinant~~ alphavirus vector RNA;

with said first helper RNA encoding at least one alphavirus structural protein and not encoding at least one other alphavirus structural protein;

with said second helper RNA not encoding said at least one alphavirus structural protein encoded by said first helper RNA and encoding said at least one other alphavirus structural protein not encoded by said first helper RNA;

and with said first and second helper RNAs lacking the alphavirus packaging signal;

wherein the combined expression of the ~~repliconrecombinant~~ alphavirus vector RNA and the helper RNAs produces an assembled alphavirus particle which comprises a heterologous RNA sequence,

is able to infect a cell, and is unable to complete viral replication in the absence of the helper RNAs due to the absence of the structural protein coding sequences in the packaged replicon recombinant alphavirus vector RNA.

65. (previously presented) The helper cell according to claim 64, wherein said first helper RNA encodes both the alphavirus E1 glycoprotein and the alphavirus E2 glycoprotein, and wherein said second helper RNA encodes the alphavirus capsid protein.

66. (previously presented) The helper cell according to claim 64, wherein said first helper RNA and said second helper RNA both include a promoter.

67. (currently amended) The helper cell according to claim 64, wherein said replicon recombinant alphavirus vector RNA includes a promoter.

68. (previously presented) The helper cell according to claim 64, wherein said inserted heterologous RNA is selected from the group consisting of RNA encoding proteins and RNA encoding peptides.

69. (previously presented) A method of making infectious, defective, alphavirus particles, comprising:

providing a helper cell according to claim 63;

producing said alphavirus particles in said helper cell;

and then

collecting said alphavirus particles from said cell.

70. (currently amended) The method according to claim 69, wherein said ~~alphavirus replicon~~recombinant alphavirus vector RNA and said at least first and second helper RNAs are introduced into said helper cell by electroporation.

71. (new) The method according to claim 69, wherein said recombinant alphavirus vector RNA and said at least first and second helper RNAs are introduced into said helper cell by a transfection method.